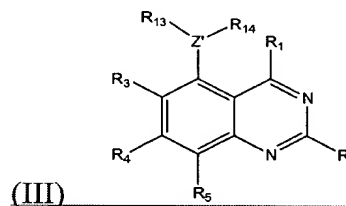
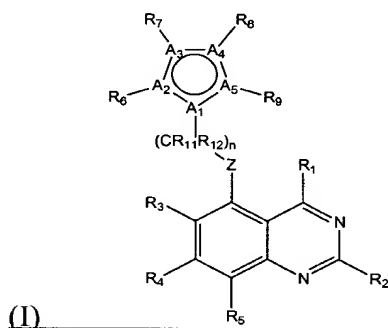


**Marked-up Paragraph:****RELATED APPLICATIONS**

This application is a divisional of U.S. Serial No. 09/971,682, filed May 1, 1998, now U.S. Patent No. 6,204,267, which, in turn, The present application claims priority to U.S. Serial Numbers 60/060,152, filed September 26, 1997, entitled METHODS OF MODULATING SERINE /THREONINE PROTEIN KINASE FUNCTION WITH QUINAZOLINE BASED COMPOUNDS, by Tan et al. (Lyon & Lyon Docket No. 225/284) and 60/045,351, filed May 2, 1997, entitled METHODS OF MODULATING SERINE/THREONINE PROTEIN KINASE FUNCTION WITH 5-SUBSTITUTED QUINAZOLINE COMPOUNDS, by Tang et al. (Lyon & Lyon Docket No. 223/249),, all of which are incorporated by reference herein in their entirety, including any drawings.

**Marked-up Claim:**

1. (Amended) A method of modulating the function of a serine/threonine protein kinase with a quinazoline-based compound ~~substituted five membered or six-membered aryl or heteroaryl ring,~~ comprising the step of contacting cells expressing said serine/threonine kinase with said compound, or a pharmaceutically acceptable salt thereof, wherein said compound has the formula set forth in formula I or III:



wherein:

(a) Z is oxygen, NX<sub>1</sub>, or sulfur, where X<sub>1</sub> is selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(b) n is 0, 1, 2, 3, or 4;

(c) A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> are independently selected from the group consisting of carbon, nitrogen, oxygen, and sulfur,

provided that if any of  $A_1$ ,  $A_2$ ,  $A_3$ ,  $A_4$  and  $A_5$  is nitrogen, oxygen, or sulfur, said  $A_1$ ,  $A_2$ ,  $A_3$ ,  $A_4$  and  $A_5$  is not substituted with  $R_6$ ,  $R_7$ ,  $R_8$  or  $R_9$ ;

(d)  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$  and  $R_9$  are independently selected from the group consisting of:

(i) hydrogen;

(ii) saturated or unsaturated alkyl;

(iii)  $NX_2X_3$ , where  $X_2$  and  $X_3$  are independently selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(iv) halogen or trihalomethyl;

(v) a ketone of formula  $-CO-X_4$ , where  $X_4$  is selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(vi) a carboxylic acid of formula  $-(X_5)_{n5}-COOH$  or ester of formula  $-(X_6)_{n6}-COOX_7$ , where  $X_5$ ,  $X_6$ , and  $X_7$  are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n5$  and  $n6$  are each independently 0 or 1;

(vii) an alcohol of formula  $-(X_8)_{n8}-OH$  or an alkoxy moiety of formula  $-(X_8)_{n8}-OX_9$ , where  $X_8$  and  $X_9$  are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n8$  is 0 or 1, and where said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(viii)  $-NHCOX_{10}$ , where  $X_{10}$  is selected from the group consisting of alkyl, hydroxyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties, wherein said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(ix)  $-SO_2NX_{11}X_{12}$ , where  $X_{11}$  and  $X_{12}$  are selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties; and

(x) a five-membered or six-membered heteroaryl or six-membered aryl ring moiety optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester moieties;

(e) any adjacent  $R_3$ ,  $R_4$ , and  $R_5$  or any adjacent  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$  are fused together to

form a five-membered or six-membered heteroaryl or six-membered aryl ring moiety,  
wherein said five-membered or six-membered heteroaryl or six-membered aryl ring  
comprises two carbon atoms of quinoxaline ring to which  $R_3$ ,  $R_4$ , and  $R_5$  or  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$   
are attached; and

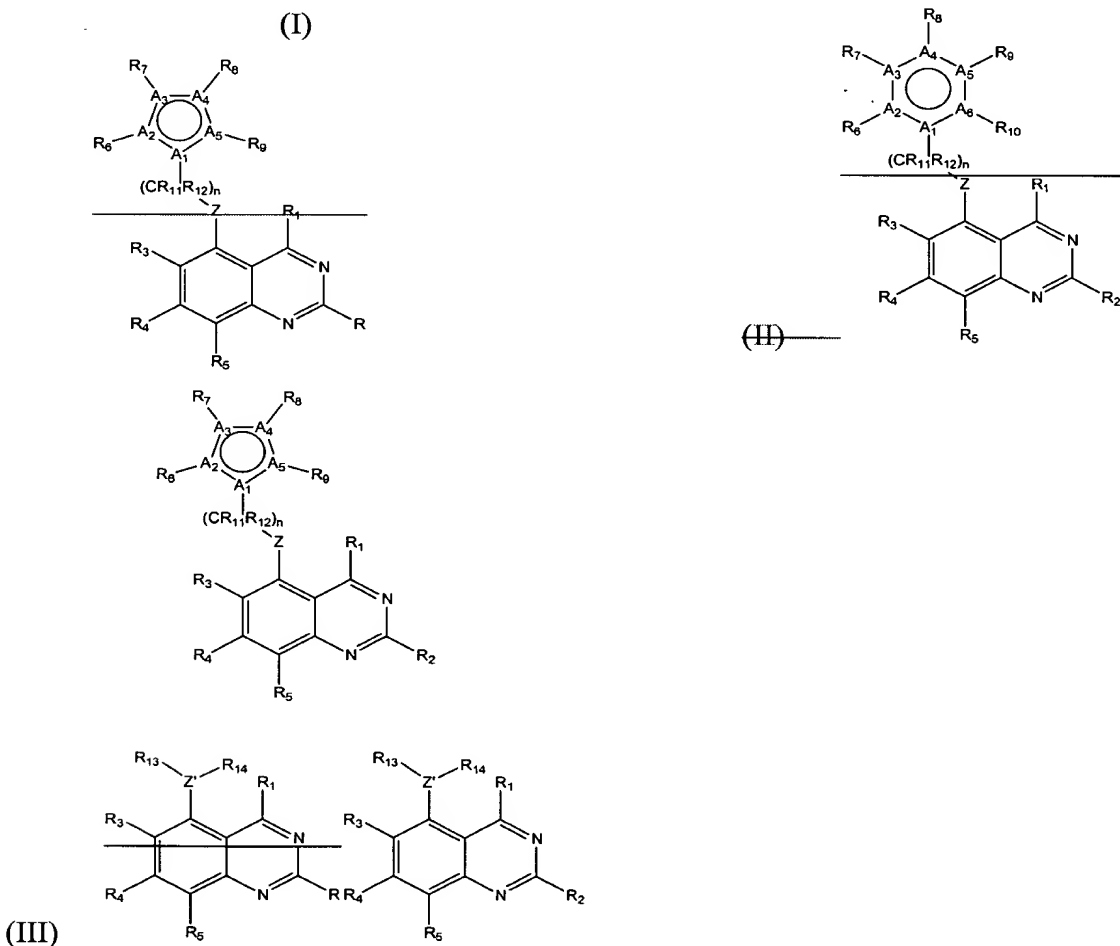
(f)  $R_{11}$  and  $R_{12}$  are independently selected from the group consisting of

(i) hydrogen;

(ii) saturated or unsaturated alkyl; and

(g)  $Z'$  is carbon, oxygen, sulfur, or nitrogen and  $R_{13}$  and  $R_{14}$  taken together form a  
five-membered or six-membered heteroaryl ring with  $Z'$  as a ring member.

11. (Amended) The method of claim 1, wherein said quinoxaline-based compound has the formula set forth in structure I, II, or III:



wherein:

(a) Z is oxygen,  $NX_1$ , or sulfur, where  $X_1$  is selected from the group consisting of hydrogen, saturated or unsaturated alkyl;

(b) n is 0, 1, 2;

(c)  $A_1$ ,  $A_2$ ,  $A_3$ ,  $A_4$ , and  $A_5$ , ~~and  $A_6$~~  are independently selected from the group consisting of carbon, nitrogen, oxygen, and sulfur,

provided that if any of  $A_1$ ,  $A_2$ ,  $A_3$ ,  $A_4$  and  $A_5$  is nitrogen, oxygen, or sulfur, said  $A_1$ ,  $A_2$ ,  $A_3$ ,  $A_4$  and  $A_5$  is not substituted with  $R_6$ ,  $R_7$ ,  $R_8$  or  $R_9$ ;

(d)  $R_1$  and  $R_2$  are independently selected from the group consisting of:

(i) hydrogen;

(ii) saturated or unsaturated alkyl;

(iii)  $NX_2X_3$ , where  $X_2$  and  $X_3$  are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; ~~and~~

(iv) halogen or trihalomethyl; and

(v) five-membered or six-membered heteroaryl ring moiety;

(e)  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$ , ~~and  $R_{10}$~~  are independently selected from the group consisting of:

(i) hydrogen;

(ii) saturated or unsaturated alkyl;

(iii)  $NX_4X_5$ , where  $X_4$  and  $X_5$  are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; ~~and~~

(iv) halogen or trihalomethyl; and

(v)  $-OX_7$ , where  $X_7$  is selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and a five-membered or six-membered aryl or heteroaryl ring moiety;

(f) any adjacent  $R_3$ ,  $R_4$ , and  $R_5$  or any adjacent  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$ , ~~and  $R_{10}$~~  are fused together to form a five-membered or six-membered aryl or heteroaryl ring moiety, wherein said five-membered or six-membered aryl or six-membered heteroaryl ring comprises two carbon atoms of the quinazoline ring to which  $R_3$ ,  $R_4$ , and  $R_5$  or  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$  are attached;

(g)  $R_{11}$  and  $R_{12}$  are independently selected from the group consisting of

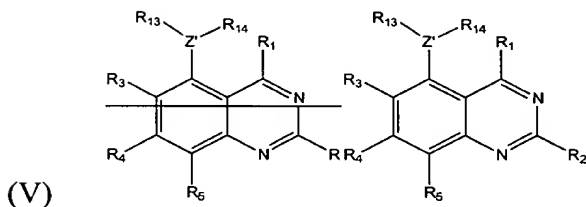
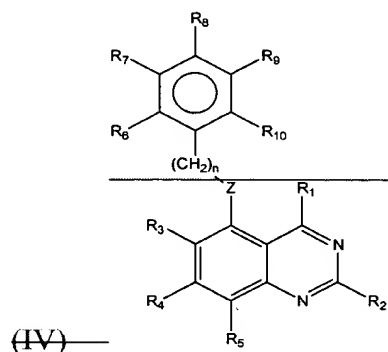
(i) hydrogen;

(ii) saturated or unsaturated alkyl; and

(h)  $Z'$  is carbon, oxygen, sulfur, or nitrogen and  $R_{13}$  and  $R_{14}$  taken together form a five-membered or six-membered heteroaryl ring with  $Z'$  as a ring member, wherein said ring

is optionally substituted with one, two, or three alkyl, halogen, trihalomethyl, carboxylate, and ester moieties.

12. (Amended) The method of claim 1, wherein said quinazoline-based compound has the formula set forth in formula ~~IV or V~~:

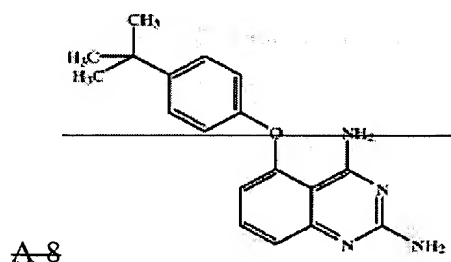
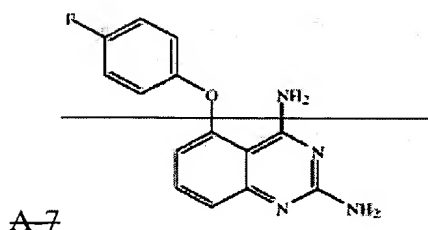
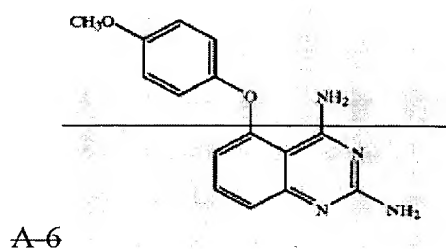
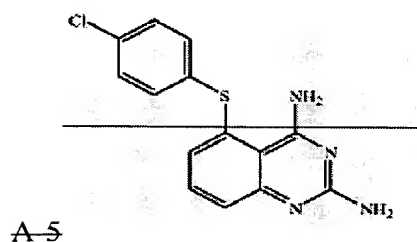
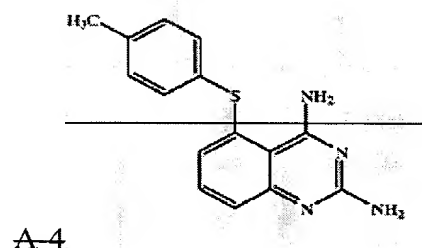
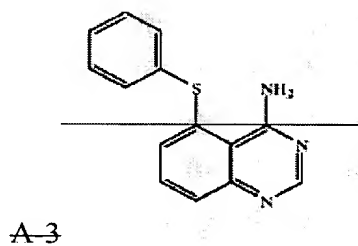
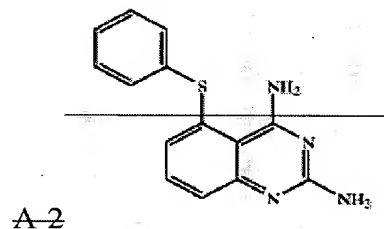
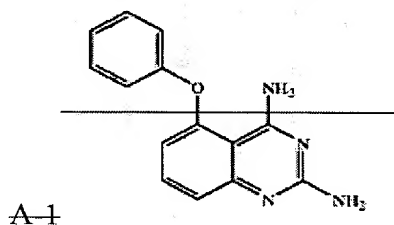


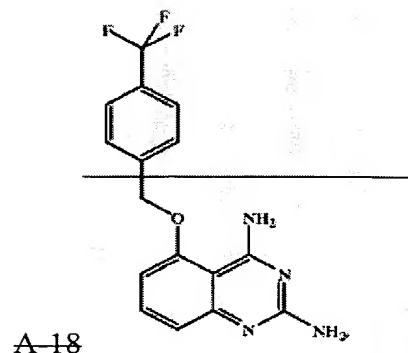
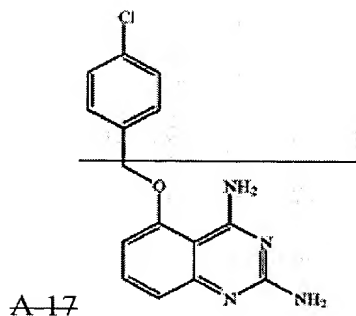
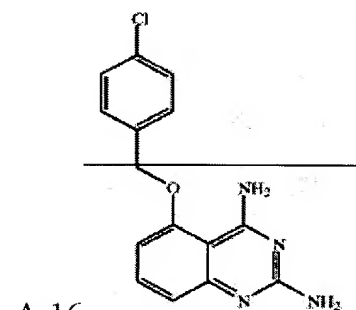
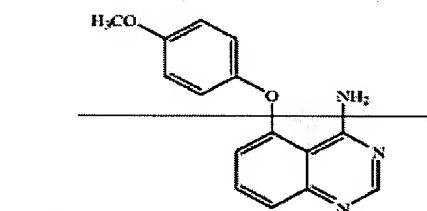
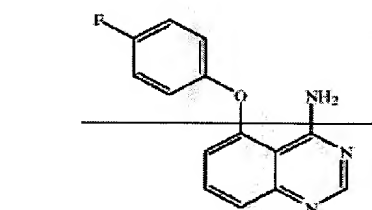
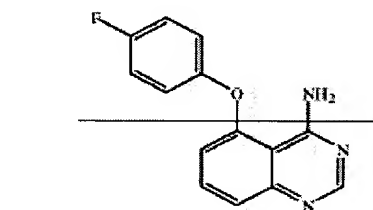
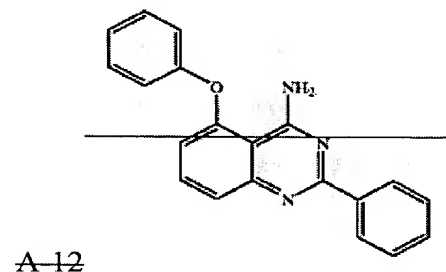
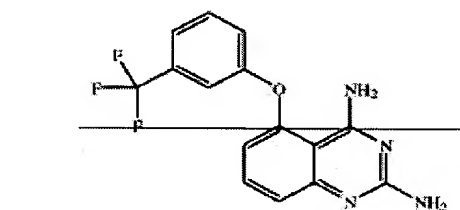
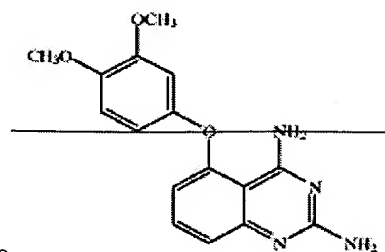
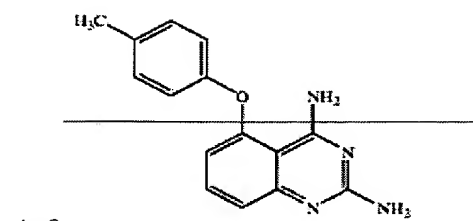
wherein:

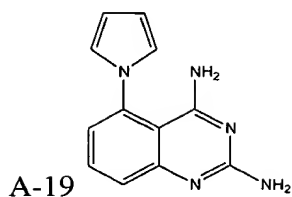
- (a)  $Z$  is oxygen or sulfur;
- (b)  $n$  is 0 or 1;
- (c)  $R_1$  and  $R_2$  are independently selected from the group consisting of:
  - (i) hydrogen;
  - (ii)  $NX_1X_2$ , where  $X_1$  and  $X_2$  are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl;
  - (iii) benzyl;
- (d)  $R_3$ ,  $R_4$ , and  $R_5$  are independently selected from the group consisting of:
  - (i) hydrogen; and
  - (ii) saturated or unsaturated alkyl;
  - (iii)  $NX_3X_4$ , where  $X_3$  and  $X_4$  are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; and
- ~~(e)  $R_6$ ,  $R_7$ ,  $R_8$ ,  $R_9$ , and  $R_{10}$  are independently selected from the group consisting of~~

- (i) hydrogen;
- (ii) saturated or unsaturated alkyl;
- (iii)  $\text{NX}_5\text{X}_6$ , where  $\text{X}_5$  and  $\text{X}_6$  are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; and
- (iv) halogen or trihalomethyl;
- (v)  $\text{C}(\text{X}_7)_3$ , where  $\text{X}_7$  is selected from the group consisting of fluorine, chlorine, bromine, and iodine; and
- (vi) methoxy;
- (f)  $\text{R}_{11}$  and  $\text{R}_{12}$  hydrogen; and
- (g)  $\text{Z}'$  is nitrogen and  $\text{R}_{13}$  and  $\text{R}_{14}$  taken together form a five-membered heteroaryl ring.

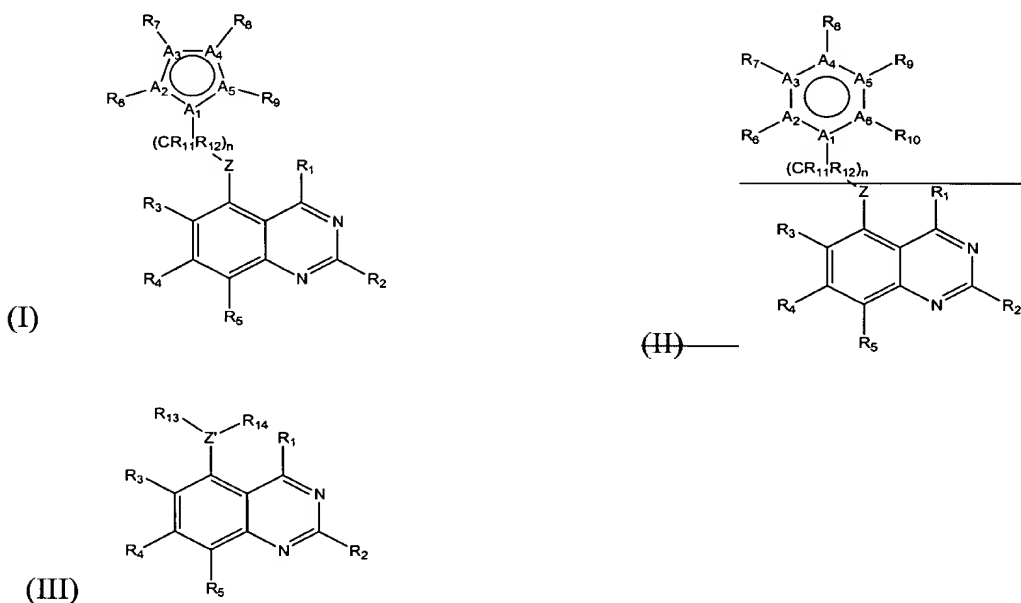
16. (Amended) The method of claim 1, wherein said quinazoline-based compound is selected from the group consisting of:







17. (Amended) A method of preventing or treating an abnormal condition in an organism, comprising the step of administering a quinazoline-based compound of formula I, H<sub>7</sub>, or III to said organism:



wherein:

(a) Z is oxygen, NX<sub>1</sub>, or sulfur, where X<sub>1</sub> is selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(b) n is 0, 1, 2, 3, or 4;

(c) A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, A<sub>5</sub>, and A<sub>6</sub> are independently selected from the group consisting of carbon, nitrogen, oxygen, and sulfur, provided that if any of A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is nitrogen, oxygen, or sulfur, said A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is not substituted with R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> or R<sub>9</sub>;

(d) R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub>, and R<sub>10</sub> are independently selected from the group consisting of:

(i) hydrogen;

(ii) saturated or unsaturated alkyl;



(iii)  $NX_2X_3$ , where  $X_2$  and  $X_3$  are independently selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(iv) halogen or trihalomethyl;

(v) a ketone of formula  $-CO-X_4$ , where  $X_4$  is selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(vi) a carboxylic acid of formula  $-(X_5)_{n5}-COOH$  or ester of formula  $-(X_6)_{n6}-COOX_7$ , where  $X_5$ ,  $X_6$ , and  $X_7$  are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n5$  and  $n6$  are each independently 0 or 1;

(vii) an alcohol of formula  $-(X_8)_{n8}-OH$  or an alkoxy moiety of formula  $-(X_8)_{n8}-OX_9$ , where  $X_8$  and  $X_9$  are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n8$  is 0 or 1, and where said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(viii)  $-NHCOX_{10}$ , where  $X_{10}$  is selected from the group consisting of alkyl, hydroxyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties, wherein said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(ix)  $-SO_2NX_{11}X_{12}$ , where  $X_{11}$  and  $X_{12}$  are selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties; and

(x) a five-membered or six-membered heteroaryl or six-membered aryl ring moiety optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester moieties;

(e) any adjacent  $R_3$ ,  $R_4$ , and  $R_5$  or any adjacent  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$  are fused together to form a five-membered or six-membered heteroaryl or six-membered aryl ring moiety, wherein said five-membered or six-membered heteroaryl or six-membered aryl ring comprises two carbon atoms of the quinoxaline ring to which  $R_3$ ,  $R_4$ , and  $R_5$  or  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$  are attached; and

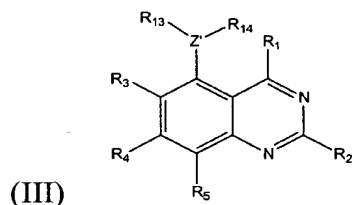
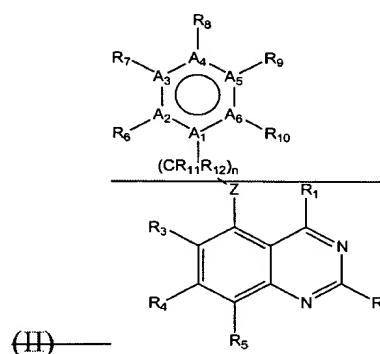
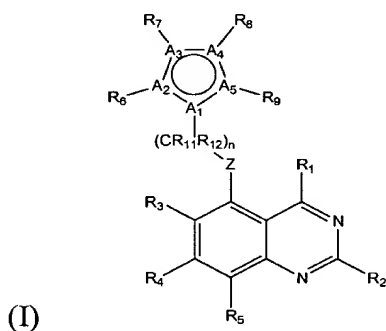
(f)  $R_{11}$  and  $R_{12}$  are independently selected from the group consisting of

(i) hydrogen;

(ii) saturated or unsaturated alkyl; and

(g) Z' is carbon, oxygen, sulfur, or nitrogen and R<sub>13</sub> and R<sub>14</sub> taken together form a five-membered or six-membered heteroaryl ring with Z' as a ring member.

26. (Amended) A quinazoline compound having the formula I, ~~H,~~ or III:



wherein:

(i) Z is oxygen, NX<sub>1</sub>, or sulfur, where X<sub>1</sub> is selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(ii) n is 0, 1, 2, 3, or 4;

(iii) A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, and A<sub>5</sub>, and A<sub>6</sub> are independently selected from the group consisting of carbon, nitrogen, oxygen, and sulfur,

provided that if any of A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is nitrogen, oxygen, or sulfur, said A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is not substituted with R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> or R<sub>9</sub>;

(iv) R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of:

(a) hydrogen;

(b) saturated or unsaturated alkyl;

(c) NX<sub>2</sub>X<sub>3</sub>, where X<sub>2</sub> and X<sub>3</sub> are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; and

(d) halogen or trihalomethyl; and

(e) five-membered or six-membered heteroaryl ring moiety;

(v)  $R_3, R_4, R_5, R_6, R_7, R_8, \underline{R_9}$  and  $R_{10}$  are independently selected from the group consisting of:

(a) hydrogen, ~~provided that at least one of  $R_3, R_4, R_5, R_6, R_7, R_8, R_9$  and  $R_{10}$  is a non-hydrogen moiety if  $R_2$  is  $\text{NH}_2$ ;~~

(b) saturated or unsaturated alkyl, ~~wherein said  $R_8$  is not methyl when  $R_2$  is  $\text{NH}_2$  and when  $n=1$ ;~~

(c)  $\text{NX}_{132}\text{X}_{143}$ , where  $\text{X}_{132}$  and  $\text{X}_{143}$  are independently selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered aryl or heteroaryl ring moieties; ~~and~~

(d) halogen or trihalomethyl, ~~wherein said  $R_8$  is not chlorine or fluorine when  $R_2$  is  $\text{NH}_2$  and when  $n=1$ ;~~

(e) a ketone of formula  $-\text{CO}-\text{X}_4$ , where  $\text{X}_4$  is selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;

(f) a carboxylic acid of formula  $-(\text{X}_5)_{n5}-\text{COOH}$  or ester of formula  $-(\text{X}_6)_{n6}-\text{COOX}_7$ , where  $\text{X}_5, \text{X}_6$ , and  $\text{X}_7$  are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n5$  and  $n6$  are each independently 0 or 1;

(g) an alcohol of formula  $-(\text{X}_8)_{n8}-\text{OH}$  or an alkoxy moiety of formula  $-(\text{X}_8)_{n8}-\text{OX}_9$ , where  $\text{X}_8$  and  $\text{X}_9$  are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n8$  is 0 or 1, and where said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(h)  $-\text{NHCOX}_{10}$ , where  $\text{X}_{10}$  is selected from the group consisting of alkyl, hydroxyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties, wherein said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(i)  $-\text{SO}_2\text{NX}_{11}\text{X}_{12}$ , where  $\text{X}_{11}$  and  $\text{X}_{12}$  are selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties; and

(j) a five-membered or six-membered heteroaryl or six-membered aryl ring moiety optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester moieties;

(vi) any adjacent R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> or any adjacent R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are fused together to form a five-membered or six-membered heteroaryl or six-membered aryl ring moiety, wherein said five-membered or six-membered heteroaryl or six-membered aryl ring comprises two carbon atoms of the quinoxaline ring to which R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> or R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are attached;

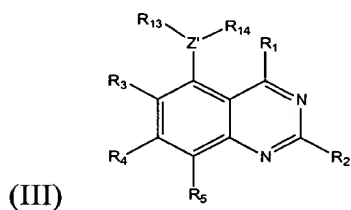
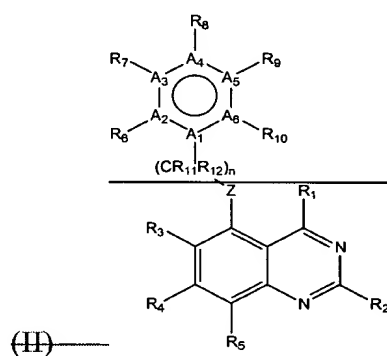
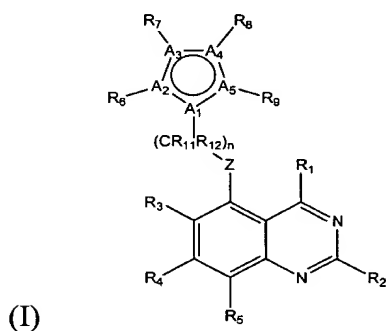
(vii) R<sub>11</sub> and R<sub>12</sub> are independently selected from the group consisting of

(i) hydrogen;

(ii) saturated or unsaturated alkyl; and

(viii) Z' is carbon, oxygen, sulfur, or nitrogen and R<sub>13</sub> and R<sub>14</sub> taken together form a five-membered or six-membered heteroaryl ring with Z' as a ring member.

27. (Amended) A quinoxaline compound having the formula I, II, or III:



wherein:

(a) Z is oxygen, NX<sub>1</sub>, or sulfur, where X<sub>1</sub> is selected from the group consisting of hydrogen, saturated or unsaturated alkyl;

(b) n is 0, 1, 2;

(c) A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, ~~and A<sub>5</sub>~~, ~~and A<sub>6</sub>~~ are independently selected from the group consisting of carbon, nitrogen, oxygen, and sulfur,

provided that if any of A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is nitrogen, oxygen, or sulfur, said A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is not substituted with R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> or R<sub>9</sub>;

(d) R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of:

- (i) hydrogen;
- (ii) saturated or unsaturated alkyl;
- (iii) NX<sub>2</sub>X<sub>3</sub>, where X<sub>2</sub> and X<sub>3</sub> are independently selected from the group

consisting of hydrogen and saturated or unsaturated alkyl; ~~and~~

- (iv) halogen or trihalomethyl; ~~and~~
- (v) five-membered or six-membered heteroaryl ring moiety;

(e) R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, ~~and~~ R<sub>9</sub> ~~and~~ R<sub>10</sub> are independently selected from the group consisting of:

(i) hydrogen, ~~provided that at least one of R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> is a non hydrogen moiety if R<sub>2</sub> is NH<sub>2</sub>;~~

(ii) saturated or unsaturated alkyl, ~~wherein said R<sub>8</sub> is not methyl when R<sub>2</sub> is NH<sub>2</sub> and when n = 1;~~

(iii) NX<sub>4</sub>X<sub>5</sub>, where X<sub>4</sub> and X<sub>5</sub> are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; ~~and~~

(iv) halogen or trihalomethyl, ~~wherein said R<sub>8</sub> is not chlorine or fluorine when R<sub>2</sub> is NH<sub>2</sub> and when n = 1;~~

(v) C(X<sub>6</sub>)<sub>3</sub>, where X<sub>6</sub> is selected from the group consisting of fluorine, chlorine, bromine and iodine;

(vi) -OX<sub>7</sub>, where X<sub>7</sub> is selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and a five-membered or six-membered aryl or heteroaryl ring moiety;

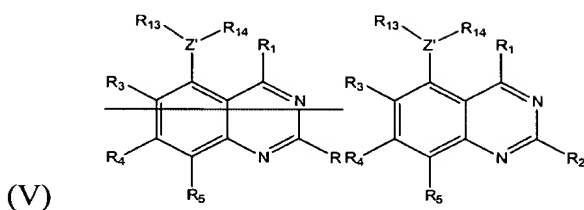
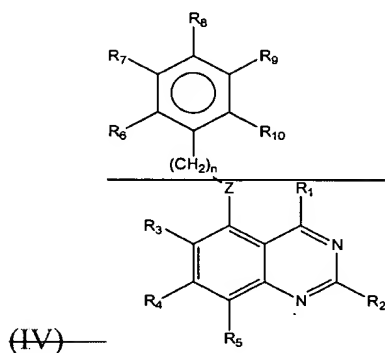
(f) any adjacent R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> or any adjacent R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, ~~and~~ R<sub>9</sub> ~~and~~ R<sub>10</sub> are fused together to form a five-membered or six-membered aryl or heteroaryl ring moiety, wherein said five-membered or six-membered aryl or six-membered heteroaryl ring comprises two carbon atoms of the quinazoline ring to which R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> or R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are attached;

(g) R<sub>11</sub> and R<sub>12</sub> are independently selected from the group consisting of

- (i) hydrogen;
- (ii) saturated or unsaturated alkyl; and

(h) Z' is carbon, oxygen, sulfur, or nitrogen and R<sub>13</sub> and R<sub>14</sub> taken together form a five-membered or six-membered heteroaryl ring with Z' as a ring member, wherein said ring is optionally substituted with one, two, or three alkyl, halogen, trihalomethyl, carboxylate, and ester moieties.

28. (Amended) A quinazoline compound having the structure set forth in formula ~~IV or V~~:

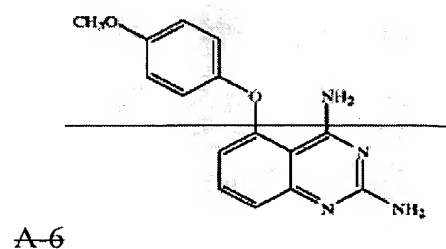
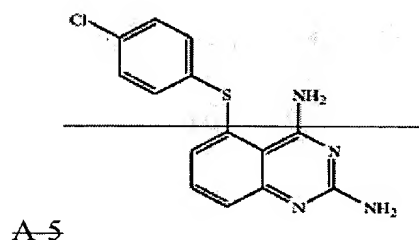
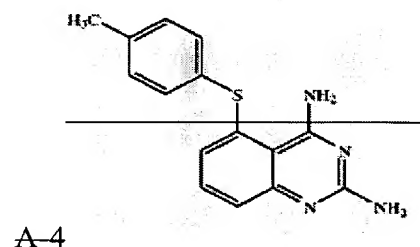
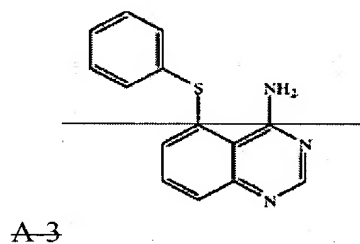
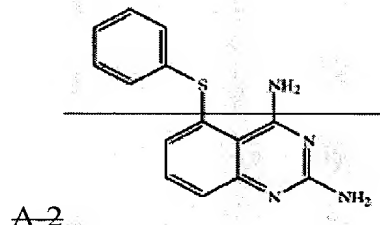
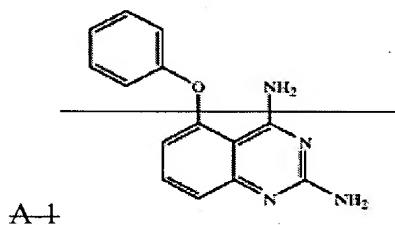


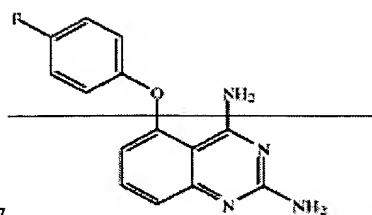
wherein:

- (a) Z is oxygen or sulfur;
- (b) n is 0 or 1;
- (c) R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of:
  - (i) hydrogen;
  - (ii) NX<sub>1</sub>X<sub>2</sub>, where X<sub>1</sub> and X<sub>2</sub> are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl;
  - (iii) benzyl;
- (d) R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> are independently selected from the group consisting of:
  - (i) hydrogen; ~~and~~
  - (ii) saturated or unsaturated alkyl; and
  - (iii) NX<sub>3</sub>X<sub>4</sub>, where X<sub>3</sub> and X<sub>4</sub> are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl;
- ~~— (e) R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, and R<sub>10</sub> are independently selected from the group consisting of~~

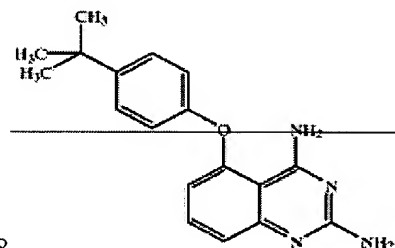
- (i) hydrogen provided that at least one of  $R_2, R_4, R_5, R_6, R_7, R_8, R_9$ , and  $R_{10}$  is a non-hydrogen moiety if  $R_2$  is  $\text{NH}_2$ ;
- (ii) saturated or unsaturated alkyl, wherein said  $R_8$  is not methyl when  $R_2$  is  $\text{NH}_2$  and when  $n=1$ ;
- (iii)  $\text{NX}_5\text{X}_6$ , where  $\text{X}_5$  and  $\text{X}_6$  are independently selected from the group consisting of hydrogen and saturated or unsaturated alkyl; and
- (iv) halogen or trihalomethyl, wherein said  $R_8$  is not chlorine or fluorine when  $R_2$  is  $\text{NH}_2$  and when  $n=1$ ;
- (v)  $\text{C}(\text{X}_7)_3$ , where  $\text{X}_7$  is selected from the group consisting of fluorine, chlorine, bromine, and iodine; and
- (vi) methoxy;
- (f)  $R_{11}$  and  $R_{12}$  hydrogen; and
- (g)  $Z'$  is nitrogen and  $R_{13}$  and  $R_{14}$  taken together form a five-membered heteroaryl ring.

32. (Amended) A quinazoline compound which is selected from the group consisting of:

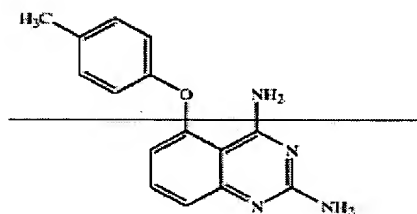




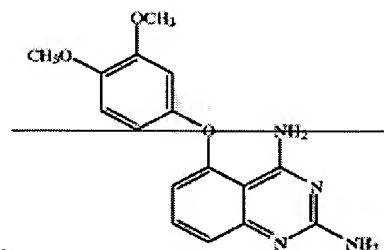
A-7



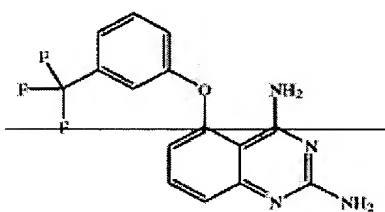
A-8



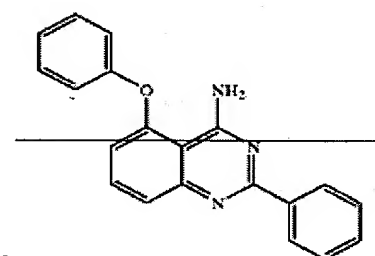
A-9



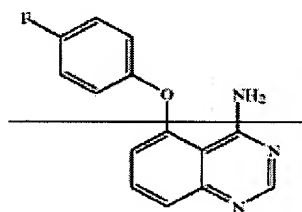
A-10



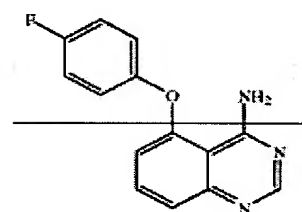
A-11



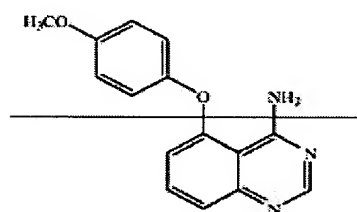
A-12



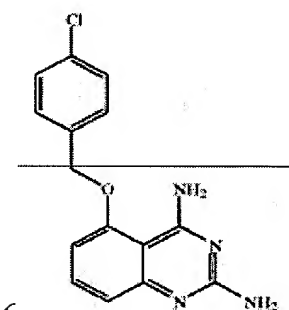
A-13



A-14

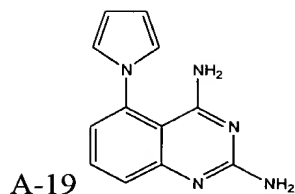
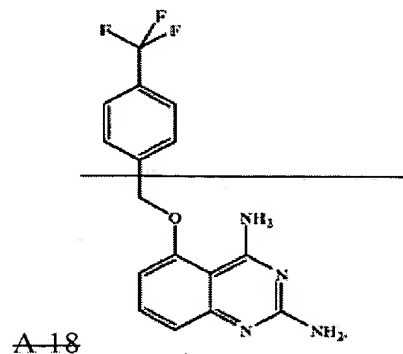
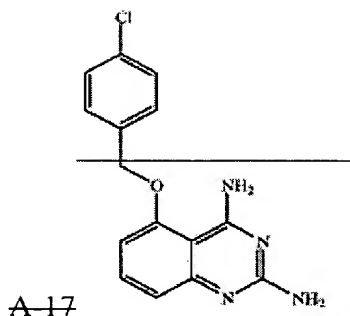


A-15



A-16

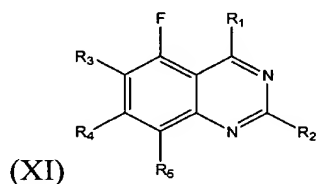




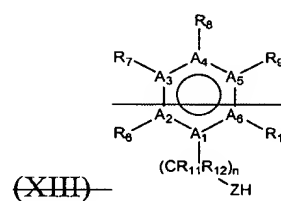
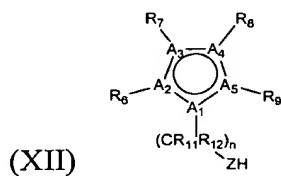
33. (Amended) A pharmaceutical composition comprising a quinazoline compound of any one of claims ~~26-32~~ 26, 27, 31 or 32 or salt thereof, and a physiologically acceptable carrier or diluent.

34. (Amended) A method for synthesizing a compound of claim 26, comprising the steps of:

(a) reacting a first reactant with a second reactant to yield said compound, wherein said first reactant has a structure of formula XI:



and wherein said second structure has a structure of formula (XII) or (XIII):



wherein,

- (a) Z is oxygen or sulfur;
- (b) n is 0, 1, 2, 3, or 4;
- (c) A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, and A<sub>5</sub> ~~and A<sub>6</sub>~~ are independently selected from the group consisting of carbon, nitrogen, oxygen, and sulfur,  
provided that if any of A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is nitrogen, oxygen, or sulfur,  
said A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub> and A<sub>5</sub> is not substituted with R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> or R<sub>9</sub>;
- (d) R<sub>1</sub> and R<sub>2</sub> are independently selected from the group consisting of:
  - (i) hydrogen;
  - (ii) saturated or unsaturated alkyl;
  - (iii) NX<sub>2</sub>X<sub>3</sub>, where X<sub>2</sub> and X<sub>3</sub> are independently selected from the group consisting of hydrogen, saturated or unsaturated alkyl, ~~and~~  
 (iv) halogen or trihalomethyl; and  
 (v) five-membered or six-membered heteroaryl ring moiety;
- (e) R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> ~~and R<sub>10</sub>~~ are independently selected from the group consisting of:
  - (i) hydrogen, ~~provide that at least one of R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> is a non-hydrogen moiety if R<sub>2</sub> is -NH<sub>2</sub>;~~
  - (ii) saturated or unsaturated alkyl, ~~wherein said R<sub>8</sub> is not methyl when R<sub>2</sub> is -NH<sub>2</sub> and when n=1;~~
  - (iii) NX<sub>2</sub>X<sub>13</sub>X<sub>14</sub>, where X<sub>13</sub> and X<sub>14</sub> are independently selected from the group consisting of hydrogen, saturated or unsaturated alkyl, and five-membered or six-membered aryl or heteroaryl ring moieties;
  - (iv) halogen or trihalomethyl, ~~wherein said R<sub>8</sub> is not chlorine or fluorine when R<sub>2</sub> is -NH<sub>2</sub> and when n=1;~~
  - (v) a ketone of formula -CO-X<sub>4</sub>, where X<sub>4</sub> is selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties;
  - (vi) a carboxylic acid of formula -(X<sub>5</sub>)n<sub>5</sub>-COOH or ester of formula -(X<sub>6</sub>)n<sub>6</sub>-COOX<sub>7</sub>, where X<sub>5</sub>, X<sub>6</sub>, and X<sub>7</sub> and are independently selected from the group consisting of alkyl and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where n<sub>5</sub> and n<sub>6</sub> are is 0 or 1;
  - (vii) an alcohol of formula -(X<sub>8</sub>)n<sub>8</sub>-OH or an alkoxy moiety of formula -(X<sub>8</sub>)n<sub>8</sub>-OX<sub>9</sub>, where X<sub>8</sub> and X<sub>9</sub> are independently selected from the group consisting of alkyl

and five-membered or six-membered heteroaryl or six-membered aryl ring moieties and where  $n_8$  is 0 or 1, and where said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(viii)  $\text{-NHCOX}_{10}$ , where  $X_{10}$  is selected from the group consisting of alkyl, hydroxyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties, wherein said ring moieties are optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester;

(ix)  $\text{-SO}_2\text{NX}_{11}\text{X}_{12}$ , where  $X_{11}$  and  $X_{12}$  are selected from the group consisting of hydrogen, alkyl, and five-membered or six-membered heteroaryl or six-membered aryl ring moieties; and

(x) a five-membered or six-membered heteroaryl or six-membered aryl ring moiety optionally substituted with one or more substituents selected from the group consisting of alkyl, halogen, trihalomethyl, carboxylate, and ester moieties;

(f) any adjacent  $R_3$ ,  $R_4$ , and  $R_5$  or any adjacent  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$ , and  $R_{10}$  are fused together to form a five-membered or six-membered aryl or heteroaryl ring wherein said five-membered or six-membered aryl or heteroaryl ring comprises two carbon atoms of the quinazoline ring to which  $R_3$ ,  $R_4$ , and  $R_5$  or  $R_6$ ,  $R_7$ ,  $R_8$ , and  $R_9$  are attached;

(g)  $R_{11}$  and  $R_{12}$  are independently selected from the group consisting of

(i) hydrogen; and

(ii) saturated or unsaturated alkyl; and

(b) collecting a precipitate comprising said compound.

37. (Amended) The method of ~~any one of claims~~ claim 34, ~~35, or 36~~ wherein said first reactant and said second reactant are mixed in one or more solvents selected from the group consisting of dimethyl sulfoxide, potassium tert-butoxide, and sodium hydride.